

WHAT IS CLAIMED IS:

~~PATENT CLAIMS~~

Sub a12¹ 1. Method for computer-supported error analysis of sensors and/or actuators in a technical system that is present in the form of a status-finite description that exhibits statuses of the technical system, using a computer.

a) whereby a status-finite description of the technical system is determined for the error case for an error of a sensor and/or of an actuator;

b) whereby a first set of achievable statuses is determined for the technical system;

c) whereby a second set of achievable statuses is determined for the error-effected technical system;

d) whereby a difference set is formed from the first set and the second set;

e) whereby result conditions are determined from the difference set, these meeting prescribable conditions.

Sub a12 2. Method according to claim 1, whereby method steps a) through f) are implemented for all possible errors of sensors and/or actuators that the technical system comprises.

Sub a12 3. Method according to claim 1 or 2, whereby failure probabilities are allocated to the sensors and/or actuators; and whereby the error analysis ensues taking the failure probabilities into consideration.

Sub a12 4. Method according to one of the claims 1 through 3, whereby method steps b) and c) ensues [sic] according to the method of model checking.

Sub a12 5. Method according to one of the claims 1 through 4, whereby a status-finite description of a process implemented by the technical system is taken into consideration in the method.

Sub a127 6. Method according to one of the claims 1 through 5, whereby the status-finite description is realized by a finite automat.

Sub a127 7. Method according to claim 6, whereby the status-finite is realized by a finite automat in the form of a binary decision diagram (BDD).

5 Sub a127 8. Employment of the method according to one of the claims 1 through 7 in rapid prototyping of the technical system.

Sub a127 9. Employment of the method according to one of the claims 1 through 7 in the framework of error diagnosis of the technical system.

10 Sub a127 10. Employment of the method according to one of the claims 1 through 7 for generating critical test cases for a commissioning and a system test of the technical system.

Sub a127 11. Employment of the method according to one of the claims 1 through 7 for preventive maintenance of the technical system.